

Warren King
Robert Fleetman - Manana Island
1963

December 19

Party consisted of Warren King, David Bratley, and Ron Walker. Arrived 1730 hours under ideal conditions, very calm, tide not too low, no wind, pleasantly cool, few scattered clouds. I immediately struck by greenness of vegetation, all the way up to the summit. Saw two rabbits as we landed. Made general survey of burrows up slope and dropped into crater for check. Climbed to top of island from crater and came back down ridge to boat. Departed 1830 hours.

In the 2 1/2 weeks elapsed time since we were on island there had been nine days of rain. As a result at least 95 percent of the burrows on the slope leading up to crater were either caved in or obliterated by erosion. In the crater most of the burrows, except for those in harder ground or along the ridges between small gullies were similarly destroyed. There were a maximum of 200 usable burrows left. Dave Bratley found one Wedge-tail, immature in good health, with small tuft of down on lower abdomen. When launched, bird fluttered to landing without showing any flying ability. The burr grass was green and lush, as were all the plants. Ron Walker took plant samples. Hippoboscids flies were very common as were a little gnat-like bug. Many burrows were checked but we only found the one Wedge-tail. It was unbanded. There were two Noddy Terns found, one immature and rather weak, although capable of flight. The other was an adult.

The reason for Wedge-tails breeding in the summer is obvious: There would be probably 75 % mortality of chicks if rains similar to those

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just experienced on Rabbit Island were to come before the time of fledging. Seven rabbits were seen. A passerine was spotted in crater, tentatively identified by David Bratley as a Red-billed leiotbrix. It appeared very similar to three passernines on Mokolua.

Species Account

1 Wandering Tattler

2+ Golden Plover

4 Mouse

7 rabbits

1 Frigatebird (soaring over island at 150+ feet)

2 Noddy Terns

1 Wedge-tail immature

1 passerine (Red-billed leiotbrix ?0

1 Black-crowned night Heron

The heron was just arriving as were leaving in the dusk. It came from the direction of the Marine Island.

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Midway Island

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24 December

Arrived Midway 2 p.m., met by Lt. Cmdr. Kebshull. Picked up equipment and bags and went to BOQ. Walk around living area of Midway revealed thousands of Laysan Albatrosses, a few Black-foots, Fairy Terns in the Casurina tree, as well as Hawaiian Noddies in abundance, many of which were sitting on nests of twigs and grasses constructed on limb of Casurina. Golden Plovers common in grassy areas. Found one dead Bonin Is. Petrel. Laysans were still displaying and dancing. Although eggs have already been laid. Behavior up to but not including spread eagle wings and copulation. Talked with Bud Boudreau briefly. He is encouraged about sound possibilities for clearing runways. Saw Fairy Terns copulating on branch. Borrowed Boudreau's house to make survey of overrun area. Noticed flight path of Hawaiian Noddies returning to island across end of overrun area and across lagoon to island.

Heard canaries singing in Casurinas.

1 Green-winged Teal

1 Sharp-tailed Sandpiper

thousands of Laysan Albatross

hundreds Black-footed Albatross

200+ Fairy Terns

500+ Hawaiian Noddies

200+ Golden Plovers

25 + Sanderlings

75+ Ruddy Turnstones

4 Bristle-thighed Curlew

3 Pintails

1 Wandering Tattler

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Midway Island

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1 dead Bonin Island Petrel

100+ rock dove--Lt. Cmdr. Kebshull has asked to have pigeons removed
as per order commander.

25 December

0830 at overrun area:

3 (maybe 5) Green-winged Teal

1 American Widgeon

1 small mottled duck with mallard sized bill--orange bill and orange legs.

No color seen on wings.

2 unidentified ducks.

One was ruddy, almost cinnamon colored on head down neck to breast. Lower
breast white. Bill blue. Hint of lighter color on crown going down to top of
bill--white along wing line, ruddy below.

Second was in company of Widgeon and may have been female of same species.

6 Wandering Tattlers

25+ Sanderlings

50+ Turnstones (Ruddy)

2+ Sharp-tailed Sandpipers

2 Dunlins? gray on back and upper breast--black legs--longer bill than
Sharp-tailed with slight down curve at and

hundreds of Golden Plover

50+ Fairy Terns

25+ Hawaiian Noddies

1000+ Laysan Albatross

25+ Black-footed Albatross

50+ Rock Dove

1 Canary

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Midway Island

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New bands 737-48501 to 48600. All banded in Sand Is. study area of Smithsonian~

Went out 1945 to look for Bonin Is. Petrels in area of beach behind O. Club.
Saw numerous Petrels--sitting on ground--digging burrows and sitting at mouth of burrow inside--10:00 was height of activity with many birds sailing overhead calling. Birds were timid and flushed easily.

200+ Bonin Island Petrels

100 + Fairy Terns--very numerous in Casurina trees near BOQ--as many as 10 in a tree--each tree with at least 2

26 December

0830 at overrun area. Much work going on in area. Trucks, men and bulldozers.

1 Green-winged Teal

2 unidentified mottled ducks

3 pintails

15+ Sanderlings

2 Sharp-tailed Sandpipers

4 Wandering Tattlers

25+ Ruddy Turnstones

50+ Golden Plover

2 Canaries heard

Thousands of Laysan Albatross

hundreds of Black-footed Albatross

50+ Fairy Terns

50+ Hawaiian Noddies

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Midway Island

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Times of first or last sightings of Bonin Is. Petrels

Dec 30 1820 Kure Is.

Jan 1 0710 Kure Is.

Jan 05 1835 Kure Is.

Jan 06 1830 Kure Is.

Jan 07 1836 Kure Is.

Jan 09 1835 Sand Is, Midway

Jan 13 1840 Kure

Jan 16 1844 Kure

Jan 16 no birds at 0645 Kure

Jan 18 1839 Kure overcast windy

Jan 19 1838 Kure clear no wind

Jan 20 1844 Kure clear no wind

Jan 21 1843 Kure clear windy

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Alakai Swamp, Kauai

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20 February

Weather--warm and clear, little wind

Left Honolulu 0730, Hawaiian Airlines, arrived 0815 Lihue Airport. Picked up jeep and drove up Waimea Canyon road. Saw and photographed Jungle Fowl at Kokee State Park. Arrived 1315 at end of road. Past park vegetation becomes all nature--before all or part introduced. Bird singing apparent even from back of jeep. Saw several Apapane and 2 Iiwi from back of truck on way in. Trail quite easily followed but difficult footing, very slippery and many trees down to crawl under and over. Arrived at cabin on Koale River around 1645 after many stops to see birds and to rest. Opened cabin, left packs and climbed ridge to plateau where Olan was seen and heard. Returned for supper by 1830. Whit⁴-tailed Tropicbirds seen whenever view of Waimea Canyon presented itself, up to 8 at one time.

Apapane--most plentiful--abundant from Kokee Park on in. Feeding on ohia blossoms; 200+ seen and heard.

Aniakiki--numerous seen and heard from parking place on in--10 seen and heard.

Aniaui¹au--numerous seen and heard frequently, 25 \pm 5 seen and heard from parking lot on in

Akepa--numerous, seen and heard from lot on in. 5 seen and heard.

Iiwi--numerous from park on in. 15 seen and heard.

Creeper--numerous near cabin. Tame. 10 seen and heard.

Olan--1 seen and heard and 2 or so heard in deep valley over plateau from cabin

Whit⁴-tailed Tropicbirds

White-tailed Tropicbird--25+ seen in Waianae canyon floating along
 Junglefowl--20 males and females seen near restaurant near Kokee Park--
 sounds like rooster--photographed--Mike Ord, Ron Walker, Andrew Bayer and me
 Golden Plover--4 flew over cabin.

21 February

Rose at 0730 and off at 0830 after a night of rain. Followed trail
 toward peak of Mt. Waialeale about 2 or 3 miles, stopping every 100 yds. or
 so to listen and watch--side trip into deep valley on other side of plateau.
 Much singing until rain after light lunch when most all singing. stopped.
 Returned around 1600 and walked upstream 1/2 mile. Supper 1830.

Apapane 200+ abundant

Amakiki 1

Akepa 2

Anianiau 25+

Iiwi 25+

Creeper 10+

*Ou 3 2♂ and 1♀

Oman 5

Ele Elepaio 25+

Chinese Thrush 1 heard'

White-eye 2

Cardinal 1 heard

Linnet 2+

White-tailed Tropicbird 1

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Alakai Swamp, Kauai

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00 AM 1 heard

Wild pig 3

Golden Plover 2

22 February

Finished breakfast 0730 but waited in cabin until 0900 because of rain. Finally started out, climbed to plateau in mud and over side into 00 Valley where 00 was heard again by Mike Ord. 2 small Kauai Thrushes (Pouaiohi) seen very clearly on way down. Pink legs--3/4 size of Oman with short tail, eye ring and darker gray breast than Oman. Bills dark not pink and eye ring not as distinct as M.O. remembered. Flying in understory, not upper branches like Oman. Both thrushes twitch their wings every 2 or 3 seconds. Saw Amakiki copulating and Andy Bayer found 2 active nests--Anianiau and Iiwi, both under construction or just completed. Nests in valley high in young ohia, hidden in tight packed clump. Due to heavy rain had to wade river but 5 mile hike back was not bad, even though ground was much wetter and soggier than on way over. Saw coot and 2 Koloe ducks on way over to airport. Hike out took c. 3 hours opposed to 3 3/4 coming in. Rented jeep for Hanalei and Kilauea Lighthouse after seeing Mike, Ron, and Andy off on plane for Hono. Saw Barn Owl on way to Mahikoa Apts. in Hanalei.

*Barn Owl 1; Coot; Koloe Duck * 2; Golden Plover 8+; Black-bellied Stilt 15+; White-tailed Tropicbird 4; Apapane 100+; Iiwi 25; Akepa 10; Amakiki 4; Creeper 6; Anianiau 20; Oman 2 heard; * Pouaiohi 2 seen; Cardinal 1 heard; Elepaio 25+.

23 February--Kilauea Point, Kauai

Arrived at Kilauea Point Coast Guard Lighthouse 0800. Station is open

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Kilauea Point, Kauai

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24 hours a day and can be readily visited any hour as long as Coast Guard is notified. The point is 200 ft. above sea level, levelled at the top to accommodate the lighthouse and Coast Guard building. Below directly offshore of the point is Mokuaene Island, separated from the main island by 200 ft. of channel, unprotected from tradewinds and swept by a strong current. Sharks are often seen between the point and island. The island covers roughly 20 acres and is surrounded by coral shelf, reaching a height of 104 ft. It is covered with a cap of brown sand and is fringed with low green shrubs which are met half way up the island by rock. The island can be approached in calm weather on the lee side, but there is no landing. Arrangements can be made with a local fisherman for transportation.

The point offers several acres of nesting room for Red-footed Boobies. The levelled top of the point falls off gradually for 100 feet before the abrupt seacliffs are encountered. On these shoulders grow limited amounts of a low bush, the same as grows on the top of Moku Manu off Oahu, which provide platforms as well as nest building material for the Boobies (*Chenopodium*). Back along the peninsula toward the main island *scaevola* grows to within 50 feet of the sea, thickly but not over 4 ft. This is utilized more as a roosting area than as nesting area. The colony on the point is recent, there having been no mention of it in Richardson, 1957, *Breeding of Hawaiian Sea Birds*. It is limited at present to the windward half of the peninsula. Boobies are nesting from within a few feet of the top down to ledges within 50 feet of the water, and they are roosting on rocks and in 2 ironwood trees which grow within 20 ft. or so of the water. The adult population of the colony appears to be around 400 birds at present. This represents a sharp increase over the past few years. The ground utilized for nesting and roosting has

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Kilauea Point, Kauai

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spread from a section of the low shrub in the center of the windward side of the peninsula to cover the entire windward side. If it is assumed that the leeward side will not be utilized, as it has not been up to now, the saturation point for the peninsula will very shortly be reached. It could conceivably accommodate 600-800 birds. At present there are 150 ± 10 nests in various stages of completion. About 20 percent of the nests have eggs, the first of which appears to have been laid in January, according to Coast Guard personnel. There is still considerable nest building activity including aerial fights over desirable sticks or pieces of vegetation. Nests are quite similar to those of Moku Manu, being elevated from 6 inches to 3 feet above the ground, mostly in low bushes but also built up from the ground in a mound. There appears to be an overflow onto the island but no nests were seen so it may prove to be solely a roost area. About 12 Boobies were observed on the island at 0800 but these soon left. There is considerable human traffic on the point, the lighthouse being a tourist attraction, but the birds were remarkably tame, although this can be attributed mainly to the fact that they had nests for the most part. The point offers a unique opportunity to study Boobies because of its easy accessibility and the proximity with which the colony may be visited. Population censuses can best be made from the next point to the east where the entire colony should be visible. On the windward side of this next point to the east there is supposed to be a small colony of Brown Boobies numbering 25 or so but the cliff on which they roost or nest? is inaccessible.

The point area does double duty in the summertime, playing host to a sizeable Wedge-tailed Shearwater population, numbering over 100 pairs judging from the number of burrows to be found. These extend around to the leeward side of the point as well. The burrows are restricted to the more elevated

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Kilauea Point, Kauai

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portions of the point where there is sufficient substrate for burrowing. The island may offer habitat for a small population of Wedgetails. This has not been determined. In addition, there should be sufficient cliff holes to support a small Bulwer's Petrel population. This should be looked for in April. There is no Tern activity on the point or the island. The island plays host to a population of 200-400 Frigatebirds nightly but, similar to Moku Manu, there has been no indication of breeding inclination. Perhaps in future years there will be. In the past year two Sooty Storm Petrels have been recovered on the point, probably just visitors, although there is the slight possibility of a very limited breeding population. This too should be looked into.

The point offers an excellent opportunity to observe and set up studies on Red-footed Boobies and Wedge-tailed Shearwaters due to its great accessibility.

Newell's Shearwaters burrows can be found on Kauai with diligence. In October each year young Newell's run down all over the island suffering from weakness due to emaciation. Jerry Swedberg, Hawaii Fish and Game Representative on Kauai, a valuable man to contact for help of any sort, has picked up cartons full of these weakened birds! He suggested three likely locations: the Hoary Herd range, the Sleeping Giant and Awekemanu, a bay along the practically inaccessible Napali Coast. With manpower and sufficient hours Newell's burrows can be found. The island offers limited possibilities for seabird work but its one or two opportunities should not be overlooked since they are unique. A trip each month for 2 or 3 days by at least one person is recommended.

Mahikoa's Apts. in Hanalei is reasonable: \$7.50 a night, comfortable, and close to the point.

Jerry Swedberg offered the following information on Kaula and Lehua, islands offshore of Niihau: the former is used as a military bombing range and is off limits, although it would be instructive to circle the island in a boat to see

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Kilauea Point, Kauai

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what is left of the once varied and populous seabird life. Lehua is 9 miles from Kauai and should be visited in April or May. Mr. Koichi Masaki, a commercial fisherman, should be contacted for the ride over. He frequently fishes the waters off Lehua and has expressed the desire to see Lehua made a bird sanctuary. To be found on Lehua are at least the following: Wedge-tailed Shearwater, Christmas Island Shearwater, Bonin Is. Petrel?, Bulwer's Petrel, Red-tailed Tropicbird, Sooty Tern?, Gray-backed Tern?, Common Noddy?, Hawaiian Noddy. The list for Kaula would be even larger. Both are veritable gold mines and should be visited as soon as possible.

Upon return to Honolulu at 1439, a tour of the offshore islands was made by car for signs of Tern activity. Up to 10,000 were seen off Manana Is., hovering all around the island, but not yet touching down. No activity was noted on other islands as far north as Popoia.

26 February

Returned to Kauai 1300 to 1330 with Jim Ludwig, Doug Whitman and Vin Hoeman. Rented car and drove to Booby colony. Windy and partly cloudy there with fewer birds than previously. 7 or 8 immatures roosting or flying overhead. Nest construction noted. Changing of brooding mates noted. Neck weaving and erect sitting posture with wings held out from body noted. Relieved bird took to air immediately and started to fly out to sea but returned. Saw Brown Booby flying amongst Red-foots. At least 1 dark phased Red-foot nesting. On way to Mahioka's stopped at pond by Haualei River and saw Stilt, coot, Koloe Herons, and Dowitcher and usual shorebirds. Afternoon spent sightseeing and cave looking out to end of reach on Ma Pali coast.

Arrived Booby colony 2030 in heavy wind and full moon. Found Wedge-tail

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sitting on ground by chain fence. Fine plumage. Earliest record for Wedge-tail. Banded 20 adult Red-foots--the rest flew away. Found 2 chicks--apparently 2 weeks old or so. Down just beginning to sprout. 50 percent or so of nests with eggs. Booby population at 500+50 birds. Returned 2130, hoping not to have caused too many desertions.

Red-footed Booby 500+50; Brown Booby 1; Shama? 1; Chinese Thrush 2 and 1 heard; Cardinal 4; W. Meadowlark 2; White-eye 7; Short-eared Owl 1; Barn Owl 2; Mynah 100+; Stilt 50; BCN Heron 6; Wedge-tail S. 11; Golden Plover 10-20; R. Turnstone 1; W. Tattler 1; Dowitcher sp. 1; Shoveller Duck 4; Kolon 2; Barred Dove 100+; Ricebird 10+; coot.

27 February

Arose 0645, birded flooded pond by Haualei River, saw Gallinules, nothing else new. Arrived Kilauea Point 0830. All boobies had returned to nests. Boobies not incubating gone to sea for most part except for some in inaccessible area to right. Made nest count:

43 on egg

62 on empty nest or beginning of nest

80 on nest but inaccessible

185 Total nests

3 already with chicks, 2 at part of point closer to island, 1 below on ledge. Two upper ones starting down cove, lower one naked and pretty young. Vin saw one Brown Booby. 1 Frigatebirds flew overhead as we arrived. Observed change over sequence and saw 2 pairs copulating--one of which was a dark phase male. 2 dark phase birds on roost. After much filming left, took Jim Ludwig to airport for Maui and continued on around to Kokee. Birded in ohia filled woods above Kokee and around Kalalau lookout. Lots of Apapane, Iiwi. Several Anianiau,

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Akepa, 2 Amakiki. 2 Creeper? Many Elepaio. Saw Junglefowl--searched in vain for Varied Tit. Returned to Hanalei 2015. Didn't bother to band because of moon. Decided to try at 0300 next morning instead. Vin Hoeman, Jim Ludwig, Doug Whitman and me.

Species accounts: 2 Gallinules; 30+ Coots; 40+ Stilts; 2 Koloa; 6 Shovellers; 6 BC Night Herons; plenty Myna; several House Sparrows; 4 House Finch; 10 Ricebirds; 1 Shama; 5 Chinese Thrush; 2 Meadowlark; 1 Barn Owl; 6 Cardinals; 300 Red-footed Booby; 1 Brown Booby; 1 Frigate; 50 Apapane; 2 Amakiki; 25 Iiwi; 5 Anianiau; 25 Elepaio; 5 Akepa; 10 Junglefowl; 2 White-tailed Tropicbirds; 10 J. White-eye; plenty Barred Doves; a few Spotted Doves; 25 Golden Plover.

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Hawaii

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Rented car 1000 and drove with David Bratley and David Au to Pohakuloa Game Farm in the saddle between the 2 Maunas. Road passed through wide belt of skinny ohia, much of which was in bloom. Several birds seen flitting across road but no identifications made. Then through lava belt to upper saddle areas which is flat and covered with Marrane, much in full bloom, and Naio. Saw Nene, 83 in all, in pens, many young ones, and 8 Koloa, 2 Laysan Teal-- 2 Laysan Teal not seen. 120 Nene released among 50 wild ones. Had () pig and sweet potato for lunch thanks to private luau of biologist at Pohakuloa who gave us key to Kaole Wildlife Management area. Also saw 1 hybrid Mouflou-- wild sheep and many pigs. All penned birds looked vigorous and alert and plump. Kaole road winds 4 miles through open Manane-Naio forest to cabin at entrance to Marua Kea Wildlife Management area. We stopped every quarter mile or so to look and listen for birds. California Quail plentiful along road, also R. N. Pheasant. No green pheasants. Nodded birds in Manane--Amakiki very abundant. Found 1 nest with 2 eggs spotted at large end off-white--20 feet up in Manane tree in shallow cup. Broke 1 egg unintentionally looking into nest. Embryo well developed, feathers showing on body. Parents came back less than a minute after we left nest. Nest lined with lichens. Also saw a few creepers--hard to distinguish only marks smaller bill and darker browner color. Saw 5 Palila. Call was strong melodic Pa-li-la. Saw 3 at one time. In same tree with Palila No. 5 was Akiapoloau, like an Amakiki except yellower and with preposterous bill, longer than in Peterson. Lower mandible short and straight--space showed between 2 mandibles. Flew off before Dave Au could see bill. He saw body and D. Bratley saw whole birds clearly too. Couldn't find him again, after searching area.

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Hawaii

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No song heard. From lookout at cabin saw 6 good sized Pigs on slopes below.

Skylarks and Linnets plentiful throughout area. Also mynahs, Barred Doves, and a few white-eyes. Saw one Puso at close range. Leiothrix around and in Neve pens. Heard them occasionally on slopes. Returned 1800 in fog for supper in Hilo and night on ship. Tomorrow National Park.

18 April

Arrived Nat'l Park 10:30 after stopping along way to look for Drepanids: saw only Apapane and Amakiki--heard Iiwi. Good medium height ohia with tree fern understory--not too wet though. At park went around cartes, seeing Kilauea Iki, site of '59 eruption, then around to Halemauumanu where we saw 2 White-tailed Tropicbirds floating below us in immense crater. Completely inaccessible. Walls unsettled and vertical. Drove out to Kipuka bird park, where 5 Apapane and countless White-eyes, Leiothrix, Ricebird and Finch were seen. Beautiful trees, both Koa and Ohia. Koa 200 ft. high, 10 ft. diameter. Ohia at least as high and straight trunked, shaped like elm. Went on Mauna Loa strip road to end. Saw Green Pheasant along way and Iiwi at end. Road 10 mi. long, ascending through Ohia, then Koa Kipukas and rather barren as lava, Pukeawe and bush, perfect for Neve but found none. Found out later they had been seen at 3 trees Kipuka near end of road on left side. Returned and went down route 185 to Oloa tract where Ou reported but rainy weather turned us back. Went down main highway to field on right side where Coturnix density supposedly highest--tramped brush for 2 hours but no Coturnix, but upon returning 8 or 10 were heard singing in area we had tramped. Had supper at Volcano house and saw volcano movies. Drove out to Kilauea Iki, Halemauumanu and chain of craters listening for Dark-rumped Petrel at each one but heard only wind. During day heard Tropicbirds in Halemauumanu without trouble. Returned to ship 11 p.m.

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Hawaii

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19 April

Called Mr. Cummins, Ranch Manager of Dillingham Ranch for permission to look for Hawk and Crow. He said yes so off we went at 0800. Arrived 1000. Ranch just Koua side of Puuanikulu. Headquarters situated on side of Puuwaawaa hill. Saw several Blue? Pheasant around Hdqtrs area. Went up road looking for crow and saw light phase Hawk, also ♂ Peafowl and ♀ Turkey. Thought we heard crows but probably distant peafowl which sounds vaguely similar. Hawk typical small buteo. but on several occasions rose, closed wings, dropped in, stall out, then glided on, as if to gain speed. Passed out of sight down hill. Returning to Hdqtrs. area after crenching, saw Erkel's Francolin and small pheasant-- dark green--possibly mate of Blue Pheasant. Saw Pueo in woods. Game birds plentiful in Headquarters area. Aviary there with several kinds of finches and dove, size of Buried dove but with red eye and smooth plumage on backs. Saw 2 more Chudear on way home. First one seen on Kilauea Crater rim yesterday, boarded hip 1600 hrs and left Hilo harbor 1800.

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Haleakala Crater, Maui

12 May 1964

David Bratley, Larry Huber and I left Honolulu 1520 on HAL for Kaluailui, Maui, arriving 15-15. Rented car and drove to Haleakala Crater after picking up film and .22 shorts for Larry's pistol. Arrangements for permits had been made previously over the phone from Honolulu. Picked up permits at Park Headquarters at 530 and departed Halermorue Trail for Holua cabin. 3.9 miles, at 1755. Chukar, Ring-necks and Skylarks numerous. On way to Park stopped at Kauaulua Pond. Saw 25+ Shovelers, 25+ Stilt and 5+ Coot. Nothing unusual seen, although observations were incomplete.

Arrived at Holua Cabin 1915 at dusk. Heard Dark-rumped Petrels upon arrival. Donned lights and searched over cliffs behind cabin until 2200. Saw one cat but Larry had the pistol. The birds sounded high up, crater river or higher. No evidence of birds landing anywhere. Calling diminished by 2200. Larry found an unoccupied burrow, and had looks at several birds in the air from vantage point high on cliff. Dave and I had to be content with hearing their peculiar barks and squeals. At times they sounded a bit like large deeper voiced, Bonin Island Petrels. Birds seemed to have individual calls although standard call predominated. Birds only calling from the air.

Had snack supper and retired 2315. Population of valley Bratley and I covered not more than six. Larry suggested not more than 20 for Canyon as whole.

After leisurely breakfast left Holua cabin at 0900 to search same area we had been over night before, Larry taking one slope, Dave and I taking

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Haleakala Crater, Maui

me next to it, the two being separated by two gulches and a ridge. Climbed maybe 500 feet up, probably to above 7000 feet, where Larry discovered four burrows at the bottom of a sheer cliff face, one of which he dug into and discovered a Dark-rumped Petrel incubating an egg. We headed for cabin in glee, where the egg was blown. The embryo was formed but small; the egg was probably five to seven days old. The white was very viscous. Egg was white, larger than hen's egg, and more elliptical. Bird photographed after tying a string to its leg so it couldn't fly away. Bird then skinned by Larry. ♂, testes 8 mm. Larry left cabin at 3 for banding siege on the cliffs, while Dave and I planned a population check along the ridge south of the cabin. Dave and I hiked 2 miles or so along the crater floor, then swung up onto a shoulder, climbing 1000 feet at least to about 9000 feet where we found three burrows at the base of a cliff and one lower on the shoulder. One of the three burrows contained a bird during the day, probably incubating, and the other two burrows looked new. Larry found one more bird which he banded, as well as ten or fifteen more unoccupied burrows. The birds are probably just beginning to lay since most of the burrows are empty but show signs of recent use. The burrows are 8 inches in diameter, oval in shape and from 4 to 7 feet deep, depending upon the amount of available soil. Burrows run roughly horizontal until last 2 feet which drop steeply to chamber at end. On our return trip to the cabin Dave and I heard birds all along the ridge, increasing as we approached the cabin. Since the birds should be settling down by the time we got back to the cabin it indicates that the greatest population density is near Holua cabin.

May 14-- Arose late, left cabin at 1100 and hiked 6.3 miles to Paliku

Cabin, arriving 1400. Larry found Dark-rumped Petrel burrow and two pheasant nests on the way. The burrow, unoccupied but fresh was at base of rock cliff practically on crater floor at 7100 feet. Two park workers passed us on hike leading string of six miles, all loaded down. On arrival, went to Nene pen where three birds were seen inside pen and one outside. Pen is to keep predators out rather than to keep Nene in.

David and I hiked up trail behind cabin to rim of crater, then east to lookout at Pohaku Paluha ? but clouds permitted only partial view of the area. One and half hours to rim from cabin. That night no Dark-rumped were heard. Park workers told us of Manawainui Gulch where they had seen large numbers of seabirds coming in: probably Newell's Shearwaters. Paliku cabin area is very wet: 200 inches a year. Forest on other side even wetter.

May 15-- Eating cold breakfast, Dave and I set out at 0800 for crater river while Larry headed for Kapalaoa Cabin to search for Dark-rumps. Dave and I made rim in one hour and five minutes and started down other side in fairly heavy fog, steering on knob just west of Puu Alaea vent, which was visible off on through fog. In hour's time we had reached tree line, hiking through open brush and finally dense brush and low tree fern country, arriving around 1045. Listened and watched from point overlooking valley until 1215.

Saw two Creeper (yellow on head and neck), 6+ Amakilui (very green), 12 Apapane - mostly in air, and as many Iiwi, also two dozen or so Elepaio (red at dorsal base of tail and orange under throat, very dark bodies. Heard one or two unknown calls but no Crested Honeycreeper or Pseudonestor.

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Hiked back to rim in 1 1/2 hours in very dense fog, coming out at precise point of trail junction. More luck than skill. Another known to crater floor. I photoed a Nene (the only one there), and we departed for Kapalaoa Cabin, hiking the 3.2 miles all up hill in 1 hour 10 minutes, to find Larry had found only a one partially constructed burrow, but plenty of cat evidence. No matches anywhere so we ate cold Starlite chicken stew. Barely edible. Heard a few Dark-rumps that night but starting later and not nearly as plentiful as at Holua Cabin. At Holua first birds appeared 1910 by Larry and 1925 to west were David and I where but at Kapalaoa they weren't heard until 2000 hours.

Vegetation and predators thicken at Kapalaoa than at Holua.

May 16--Had cold breakfast and left Kapalaoa cabin before 0900. Arrived Holua cabin 1030 - 3.3 miles. Where we had our first hot meal in two days. Passed eight high school students on way, four still back at Holua cabin. Larry photoed a burrow low down, close to cabin, then we headed up Hale Manu trail and arrived at car 1300. Larry took little used trail to top and found three more burrows on the way. Drove to Park Headquarters and told Mr. Zink about our finds, thinking him for phone - arranged permits. Drove to Manawainui Gulch and searched for Newell's Shearwater burrows for two hours. At dusk Larry stationed himself in gulch and Dave and I drove to Pahihi and Pukai Gulch. Gave up 2030, no Newell's having been seen or heard. Drove back to ship, having hamburgers and banana splits on way. Found White-tailed Tropicbird feathers, at least one bird full on ledge in gulch, but no Newell's traces. Also saw one White-tailed Tropicbird high over crater but saw none on cliffs of crater.

King, Warren B.
1964

BCF Cruises

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March 16--Departed Fisherman's Wharf 0900 for Pearl Harbor to refuel.

Left Pearl Harbor 1400 and headed southeast. Jaegers plentiful the whole afternoon since we were always in sight of land. No Black-foots.

The Jaegers didn't follow the boat, only passed it by. Newell's Shearwaters were seen, six in all, one single and five together in a loose flock, still close to the islands. Sooty Terns were abundant, singly, in small flocks, and large flocks, feeding, of over 200 birds. Most terns were heading northeast, toward the islands. Also, Red-footed Boobies, mostly adults, were seen generally heading toward the islands.

A very compact flock of seven, probably of this species, was noted. A Noddy Tern was seen perched on a block of wood floating. Also several others were seen in the vicinity of the large (200+) Sooty Tern feeding flock. Many whales, porpoise, swordfish etc. were seen. The porpoise often would play within 20 feet of the bow of the ship. Two Jaegers observed on two occasions to be in midst of feeding flock of Sooty Terns.

March 17--First tropicbirds seen at sunrise. Sooty Terns in 2's and 3's all day. Noted following discrepancies between our identifications and crew's. Tropicbirds called Fairy Terns.

Bonin Island Petrels called Storm Petrels

Shorebird called Storm Petrel

Birds scattered throughout day. No concentrations. One shorebird seen, probably a sanderling. Fairly good variety, Newell's Darked-rumped, White-necked, Harcourt's Bonins and Wedge-tail all in 1's or 2's. Both Bonin Island Petrels had thick dark ventral wing surface edges.

Location 1st day Date 16 Mar 64 Time 1430 to 1900
 Observer King, Sundell
 Weather windy - to 25 knots, partly cloudy - wind from E

SPECIES	Abundance				Breeding			Remarks
	1-10	10-100	100-1000	1000 +	Nests	Eggs	Young	
Laysan Albatross								
Black-footed Albatross								light phase
Wedge-tailed Shearwater	1							
Christmas I. Shearwater								
Audubon's Shearwater								
Bonin I. Petrel								
Phoenix I. Petrel								
Bulwer's Petrel								
Sooty Petrel								
Red-tailed Tropicbird								
White-tailed Tropicbird								
Masked Booby								
Brown Booby								9 adult 1 immature
Red-footed Booby		10						
Great Frigatebird								
Golden Plover								
Ruddy Turnstone								
Wandering Tattler								
Sanderling								
Bristle-thighed Curlew					303			flock of 6, 9, 200+, 12, 50
Sooty Tern								
Gray-backed Tern								
Brown-winged Tern								
Common Noddy				3				
Hawaiian Noddy								
Blue-gray Noddy								
Fairy Tern								
Pomarine Jaeger					19			1 flock of 5
Newell's Shearwater				6				
Shearwater/petrel				1				
Booby sp				7				

in compact flock, probably Red-foots
sightings: 542
of flocks: 7
Total birds: 351

flocks: 1608 5 Newell's Shear 1614 6 Sooty Tern
travelling travelling
1705 9 Sooty Tern 1715 200+ Sooty Tern
travelling feeding
1731 7 Booby sp 1747 12 Sooty Tern
travelling travelling
1749 50 Sooty Tern
feeding

SPECIES	Abundance				Breeding			Remarks
	1-10	10-100	100-1000	+	Nests	Eggs	Young	
Laysan Albatross								
Black-footed Albatross								
Wedge-tailed Shearwater	1							
Christmas I. Shearwater								
Audubon's Shearwater	2							
Bonin I. Petrel								
Phoenix I. Petrel								
Bulwer's Petrel								
Sooty Petrel								
Red-tailed Tropicbird								
White-tailed Tropicbird								
Masked Booby								
Brown Booby								
Red-footed Booby								
Great Frigatebird								
Golden Plover								
Ruddy Turnstone								
Wandering Tattler								
Sanderling								
Bristle-thighed Curlew								
Sooty Tern				14				
Gray-backed Tern								
Brown-winged Tern								
Common Noddy								
Hawaiian Noddy								
Blue-gray Noddy								
Fairy Tern								
White-necked Petrel	1							
Harcourt's Storm Petrel	2							
Novell's Shearwater	1							
Tropicbird SP	2							
Petrel SP	3							
Shearbird	1							
Shearwater/petrel	1							
Dark-rumped Petrel	2							

probably Sooty

of sightings: 22

of flocks: 0

Total birds: 32

King, Warren B.
1964

BCF Cruises

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March 18--Red-tailed Tropicbirds noted in moaning, three at once, doing some pinwheel display behavior. All but the first T.B. (0826) had short tail feathers, some none too red. One had yellow bill and short, almost white retrices but the size and all white auxilars gave it away. Sundell saw New Zealand Shearwater at 1129, very close to ship. He noted black cap, light grey neck and back, very strongly marked dark bars on wings (upper surface) and back forming inverted W pattern. Harcourt's Storm Petrel also came very close. Possibility of collecting both. A smallish Shearwater with pointed wings was indistinctly seen during abandon ship drill. A good feeding flock was spotted by watch at 1340 with Sooty Terns above and Shearwaters and Petrels below. Our count 504, watch's count 125. Watch also noted that the flock contained Noddy Terns and Tropicbirds. Neither of these were seen by us. The latter is especially questionable. At 1500 a large, dark gull-like bird was seen by Sundell, but not clearly. He called it a Jaeger sp. Very far from land for Jaegers to be seen. At 1555 13 Sooty Terns, at least two of which were immatures, passed over and around ship. The immatures were heard to call. One was less than 50 feet from the ship. If it is assumed that the immature plumage lasts only six months the birds were most likely from the Line Islands since there are no birds breeding in fall on Leewards, offshores or Johnston. At 1711 a shearwater was seen by King at a mile's distance silhouetted against the horizon. It was flying in long, high scaling arcs reminiscent of Sooty Shearwaters perhaps.

March 19--Two Bonin Island Petrels seen before 7:30 a.m., the second imperfectly. The first flapped quite a bit and didn't scale much but the

flocks 1335 40 Sooty Tern 1450 10 Sooty Tern
feeding 10 Wedgetail? travelling

1555 13 Sooty Tern
travelling

King, Warren B.
1964

BCF Cruises

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wind was only 1 $\frac{1}{4}$ knots. The first Fairy Tern of the cruise was seen $\frac{3}{4}$ mile off. It maintained its position 25 feet or so above waters until it disappeared. A Noddy? flew over the deck of the ship but its rear was all I saw so I wasn't sure of the call. At 1145 came the first of eight possible Sooty Shearwaters. I called it a Christmas Island Shearwater (?) because of its flight pattern (lots of flaps, no high arcing scales, continually low over water, no real hurry to get anywhere) but in view of succeeding sightings it seems probable it was a Sooty Shear, although the underwing surface was not seen. At 1215 a Sooty Shear passed 250 off the bow, this time revealing its silver linings although it too flew low and unhurried, atypical except for one high arc after it passed the bow. At 1221 another more typical in flight, but not revealing its silver linings. Again the same 1345, 1758 two Sooty Shears, one of which showed its silver linings, the other was not seen by me, but watch assured me it was same species. At 1832 and at 1846 dark Shearwaters were seen in failing light corresponding to Sooties in flight and silhouette but couldn't even be sure of color. Two Red-tailed Tropicbirds for the day, both immatures with short central retrices. One of the "Harcourts E.P.'s" seemed to fly with greater strength, more petrel-like, less bat-like. The others were the usual bat-like, almost butterfly-like birds. The one with the stronger flight had very noticeable lighter patches or bars on the dorsal wing surface. It seemed larger too, almost Bonin Island size. At 1504 a large gull-like bird came up alongside the ship on the port side at about 25 feet up about 200 yards off. It was dark brown dorsally and lighter ventrally, with distinct white bars in the dorsal wing surface at the wrist. It was

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a heavy bird, flying with continuous wingbeats. It was undoubtedly in the Stercorarius family, possibly a Skua. My description compares exactly with Sundell's Jaeger-like bird of yesterday. The "Wedgetail" at 1500 didn't look quite right. It was very grey, had very white ventral surfaces. Ventral wing surface showed too much white in the middle, and black edges were too thin. Flew rather more typically shearwater than most Wedge-tails, although difference here may be hair-splitting. Suspect larger numbers of Sooty Shearwaters tomorrow, although we turn North from today's east course.

March 20--Starting 19 March 1964 a record is being kept of the two types of "Harcourt's" Storm Petrels we have been seeing. The first, hereafter called Type A, is slightly smaller, very bat-like in flight, using floppy wing beats, almost like a butterfly; while the second, called type B, is more petrel-like, slightly larger, flies very controlledly on stiff wings, arcing and scaling in a diminutive copy of Bulwer's Petrel. We suspect type A to be the true, O. castro and type B to be O. leucorhoa Leach's Petrel, but nothing will be conclusively proved until both are collected. The light dorsal wing bars are more noticeable on B and it seems to be generally a lighter colored bird.

Sooty Shearwaters were the big news today. Several certain and several possibles seen. Birds flying in typical Sooty Shearwater fashion but not revealing silver linings will be called either "Sooty Shear (?)" or Shear sp. with a note saying possible sooty shear, depending on degree of certainty. At 1426 two Sooty Shearwaters and a type B Harcourt's were flushed from the water by the ship. Four of today's Wedge-tails were dark phase and very dark indeed. Ventral surfaces

Location 4th day
Observer King, Sundell Date 19 Mar 64 Time 0630 to 0846
Weather light wind (15 knots) partly cloudy - wind from E.

[illegible]

flocks: 1630 20 Sooty Tern
travelling

[illegible]

flocks: 1020 15 sooty Tern feeding 1810 50 sooty Tern feeding

1816 16 Sooty Tern travelling

King, Warren B.
1964

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hardly any lighter than dorsal surfaces. Wedgetail flight is dead giveaway however. One Newell's today, close enough to be very clearly seen, even the white tabs that climb up the sides behind the wings ala violet-green Swallow. At 1023 and at 1030 two Bulwer's Petrels were seen at close range. They didn't quickly disappear from sight like a Storm Petrel. The wedge-tail, light dorsal wing bars, flight pattern, size, color, everything bespoke Bulwers. At 1159 four whales were seen fairly closely to the ship. They all spouted but identification is still beyond my grasp. Two flocks of Sooty Terns passed by at 1810 and 1816 with only a couple of individuals of the first flock observed feeding.

Two Wedgetails were observed feeding by Sundell. They were light phase.

March 21--Had a nice Newell's south at day break. Fairly well seen.

All Harcourt's SP's seen today were Type B - Petrel-like as opposed to Type A bat-like. All Wedgetails (19) were light phase. Two Frigatebirds (1 ♀ adult) seen in each case unaccompanied. One of the Harcourts B's was seen to alight on the water with extended wings. The second Frigate was fishing, dropping from 30 feet or higher to inches of the water, then pulling up, evidently hitting the water only with its bill. Most of the Shearwater sp. birds today were almost certainly Sooty Shears. The flight pattern ought to be a giveaway, but there is always chance of error. The Wedgetail, when it arcs high doesn't get as vertical, and coming onto the descent it comes horizontal for a few tenths of a second before

flocks: 1205 16 Sooty Tern
travelling 4 Wedgetail

King, Warren B.
1964

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swinging onto the next turn. The Sooty swings abruptly from one turn to the next, never taking time for that horizontal glide. The Wedgetail wings are held with a crook like a Frigate at the wrist, and are slightly arched. The Sooty uses flutter and straighten wing posture.

The Sooty Tern, Wedgetail flock was milling but not actively feeding.

At 1604 A Laysan albatross came up from behind and followed the ship for two to three passes then departed. Sooty Shearwaters going north to northwest and Wedgetails going northwest to west for most part.

Watches are getting sharper on calls, although only two (George and Harold) are interested in species level.

A group of three Harcourt's Type B were seen. Pretty close together.

March 22--Started off morning with three Black-footed Albatross on way into Hilo to drop off BCF personnel who was near death from seasickness. They followed us subsequently the whole day. Building up their numbers to five by nightfall. Instituted a method of spotting additions: A for white rump, B for more white than dark, C more dark than white, and D all dark. Since one or two are straggling several hundred yards behind ship most of the time the system is rather ineffectual but it may help. Five were seen floating together during hydro station. All today's Wedgetails were light phase, some scaling very high. A petrel of some sort was seen scaling over 50 feet high. Coming toward Hilo Harbor two Jaegers and a Gull were seen. The latter was medium sized, slightly larger than a Jaeger, with a grey back and white tail with black tip. Gull seen from 400 yards so description not very complete. Also four Anous sp. probably Hawaiian Noddies passed by. Bob saw a Hawaiian Noddy later at 1210. Spent short time in Hilo harbor amid rain and heavy overcast where I talked to Pat Gould comparing notes.

Abundance	Breeding

[illegible]

flocks: 14095 Sooty Tern
travelling .

King, Warren, B.
1964

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Four Sanderlings seen at 1142 in winter plumage still. The Sooty Shearwater parade started at 1216 with 28 certain or probables going by during the day. A Bulwer's Petrel and a possible one were seen at 1218. At 1450 recorded the trip's first White-tailed Tropicbird. Only one Harcourts SP. today, a type B.

Tonight Bob and I start taking BT casts with Mel Kau, every 2 1/2 hours around the clock. Jolly good fun.

March 23--Two groups of Sooty Terns were observed at dawn. The early morning (0619) count revealed five Black-footed Albatross behind us. This number went down to three during mid-day and increased to six at dusk. A Sanderling was seen by Sundell at 0726. This is the third sighting of this shorebird. At 0850 what appeared to be the remnants of a feeding flock drifted past: Two Sooty Terns and several shearwater/petrels. The first Sooty Shearwater appeared at 1150. Their numbers were down today (five) but should pick up again. If they don't pick up it may mean we have discovered the eastern extension of their migration route north. A slow day with heavy seas.

Spare time at present is taken up with BT casts, catching up on sleep and paperwork.

Essentials of a BT cast:

1. Temperature of surface water
2. Surface salinity sample
3. Drift card dissemination
4. BT cast, wash slide with fresh water
5. Logging in cast
6. Relaying radio message if at at 2, 8, 2 or 8.
7. Weather if at 2, 8, 2 or 8
8. Relaying weather message
9. Plotting BT profile
10. Logging in BT in Scientists log
11. Engraving BT slide with time, No., date, cruise, etc.

Location 8th dam

Date 23 Mar 64

Time 0614 to 1838

Observer Kim Sundell

Weather June 17-25 birds from E with heavy rain and scattered rain squalls.

of sightings: 17
of flocks: 0
total birds: 30

King, Warren, B.
1964

30

If weather is to be taken the whole process takes an hour. If not, around 30 minutes.

March 24--A slow day. Eleven birds in all. Black-footed Albatross again with us all day, two or three of them all the time. Tried to catch them on hook baited with balogna but they seemed to be able to discriminate between hooked pieces and non-hooked ones. They swam to within 15 to 20 feet of the stern of the ship during a hydro station. At 1130 Dave Au saw a Harcourt's Storm Petrel, type unsure, but it was the first bird of the day. At 1245 a Sooty Shear, the only of the day and 1520 alone Frigatebird making circles in the sky. Around 1740 a group of three Shearwater/petrels came by close to the ship, all of which were seen by the watch but not by me. Blindness at my age,. A tropicbird finished off the day. Too far to tell species. Tonight we start a variability zone, which means B.T.'s every 50 minutes until tomorrow afternoon. The trip would be quite enjoyable without the added B.T. cast commitment but at least Bob and I can speak about them from experience.

March 25--No Black-footed Albatross present at dawn this morning. One appeared at 0745, flew around the ship a few times, sat in the water a while as the ship took a hydro station, then departed about 10 minutes later. No more ever seen the rest of the day. Wedgetails increased today; one group of four, one of which was dark phase, was seen heading north. At 0922 Sundell and King both saw a shorebird which we concluded was a Phalarope sp. although species identification was impossible due to distance. Sundell wrote "75 yards off starboard (at nearest point - not seen until somewhat later); seen on water three different times between

Location 9th Lane

Date 24 Mar 64

Time 0604 to 1840

Observer King, Sussell

Observer King, Smedley
Weather light wind 6-12 knots from E calm seas low swell - occasional

rain squalls - moderate cumulus clouds			
			Breeding

[illegible]

of sightings: 9

1000000

total birds: 11

Location 10th day
Observer King, Sundell
Date 25 Mar 64 Time 0601 to 1830
Weather calm, wind S-SW from E overcast building up in afternoon with scattered rain squalls

[illegible]

flocks: 1025 5 ± 2 Sooty Tern
feeding

King, Warren B.
1964

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short flights, gray back (possibly with stripes between wings as in Northern Phalarope); white head underparts; pronounced white wing stripe; long neck; sat high on water in typical phalarope attitude; tail pattern black or dark central stripe separating white patches along sides, entire tip of tail dark; bird in typical winter plumage but not close enough to allow species differentiation by basic markings on bill shape and color. " Sundell has had previous contact with all three North American species of Phalaropes.

A small feeding flock of 5+2 Sooty Terns was seen at a distance of a mile or so. Birds were observed to be lutting the water. AT 1124 the second white-tailed tropicbird of the trip was seen as it apparently was gaining altitude from sitting on the water. Both Harcourt's sp's seen today were type B.

The phalarope sighting is the first for the Pacific Project. No Sooty Shearwaters were seen today.

March 26--Started the day with two Sooty Terns across the bow at 0610.

At 0654 two shorebirds, either Sanderlings or Phalaropes were seen by Sundell. Again at 1151 a similar shorebird was seen by King. Due to bad light and distance it was impossible to determine species. All the shorebirds so far have been similar, all quite small and light colored.

All four Wedgetails today were light phase. Two of the three Harcourt's SPs for the day were type B, the third was spotted by the watch. Two Sooty Shearwaters, both seen quite well, one at 1031 and the other at 1640, both heading northwest. The trip's second Fairy Tern was seen by Sundell at 1347 close in. The fourth Bulwer's Petrel came by heading roughly

[illegible]

King, Warren B.
1964

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south at 1641. Several shearwater/petrels passed by but due to various circumstances, bad light distance, BT cast etc. , none were identified by species all were light ventrally, dark dorsally. One Red-tailed Tropicbird was seen feeding by diving from 50 feet or so into water with splash, one breaking fall slightly on way down. Sundell's Fairy Tern was called Tropicbird by watch. On another occasion he reports a Tropicbird being called a pooby by the watch.

March 27--Watch reported four Sooty Shearwaters at sunrise, (Howard-reliable),. Sitting around the drogue which was set to study currents was a small congregation of White-beaked Petrel, an immature Masked Booby, and two unidentified Shearwater/petrels. The booby narrowly avoided being collected when the net failed to encompass his body. He returned twice in the day, at 0635 and 1442. Seven Wedgetails were seen, three light three dark and one not determined. Sooty Shearwaters and possibilities came through all day - 10 in all. The Harcourt's was type B. The flock of 40+ Sooty Terns and eleven Shearwaters (one of which was a Wedgetail at least) was feeding in the seemingly rich waters within a mile of the drogue. A 3 foot 4 inch Mahimahi dolphin and a 4 foot Wahoo were caught as well as a 4 foot White fin? shark which was dispatched and returned to feed its compatriots. The Wahoo was chomped upon several times by sharks before it could be gotten into the boat. A marline was seen too and four killer whales(?)

The mysterious petrel of 0720 and 0945 was apparently a molting White-necked petrel. It was seen very well by Su dell at 1040.

A Laysan Albatross appeared for several minutes in good light at close range so that everyone on the bridge saw it. It is undoubtedly the furthest south record for this species 11 degrees 30 feet north 151 West.

Location 12th day
Observer King, S. Smith Date 27 Mar 64 Time 0604 to 1845
Weather Windy, 18 knots from E moderately high swell, light cumulus
cloud cover

[illegible]

flocks: 09.25 40+ Sooty Tern
1 Wedgetail
10 Shearwaters sp

Warren B. King
1964

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At 1145 a fine Newell's came by in good light at close range. At 1720 Sundell saw an all dark Shearwater, smaller somewhat than a Wedgetail and more Shearwater-flying. Most likely a Christmas Island Shearwater. Two Bonins ? and Bulwers ? Petrel were also sighted. It was a varied and interesting day, all spent within two or so miles of the drogue. Several birds appeared twice or three times. It shows that as many birds are apt to be seen stationary as on the move. The area chosen seemed to be high in productivity; much fish as well as bird life. Even a feeding flock came by. Maybe floating rafts might provide a new way of studying ocean birds.

March 28

A prize day. Four hundred and eighty-one birds, activity constantly. Wedgetails numbered, 9 light phase and 11 dark phase. One bird, at 0652 was thought to be a Sooty Storm Petrel. It appeared all dark and flew less petrel-like than Harcourt's Type B although not as Bat-like as Type A. All Harcourts seen well were type B. Three Harcourt's were seen in amongst a feeding flock of Terns and Shearwaters. Twice Harcourts were seen dabbling on the surface with their feet, running up the side of a wave on outstretched wings. One was seen sitting in the water with wings folded, too. Another shorebird was seen at 0626, similar in appearance to all previous ones and just as far away. At 0800 a large feeding flock was seen feeding on Skip jack 250 ± 50 Sooty Terns, 10± Wedgetails, and 5 unidentified shearwater/petrels. Sooty Shears all day in small numbers 6 +2 probables. All were headed North. Still no flocks.

flocks 1310 10 Sooty Tern

travelling

1315 52 Noddy Tern

travelling

1325 5 Sooty Tern

travelling

1345 6 Sooty Tern

travelling

1640 200 Sooty Tern

feeding 40 Red-footed Booby

1705 6 Wedgetail

travelling

King, Warren B.
1964

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Several times today large petrels were seen that appeared mottled on the back as if molting. Both White necked and Dark-rumped have been seen in this state. Some even had secondaries missing. Perhaps study skins will dispel our doubts.

At 1140 feeding flock No. 2 appeared - 30 sooties, 2 wedgetails, 3 Harcourts - most unusual - 4 shearwater unidentified and 1 white-necked petrel. At 1212 75± 10 Sooty Terns were seen circling and feeding. No Shearwater/petrels were seen by me after careful scrutiny although watch held contrary opinion. Watch was as stubborn as I. At 1555 a non-feeding flock of shearwaters and petrels passed. Two light and one dark Wedgetails, two molting Dark-rumped Petrels, two unidentified Shearwater/petrels and a brown upper and white under petrel-size of a Newell's although chunkies - between Bonins and Dark-rumped size - closer to Bonins. Upper parts uniformly dark brown. This same species seen again at 1640 briefly at close range. It had dark spots around eye - underwing showed thick dark edging and white center. May have had has mark across center of wing. Light colored shafts to primaries showed on dorsal wing surfaces a la Jaeger. I have no really good guesses. It flies differently than Bonins - not as facile on its tight banks. Flaps more too - doesn't hunch shoulders like Bonins. Flies without too much hurry.

Masked Booby seen three times today, over hour apart each time.

A white-necked Petrel Sundell saw at 1300 apparently miscalculated proximately to ship and twisted and turned just in front of it, finally soaring to 50 feet circling ship. At 1540 we turned North after finishing a long hydro station at 10° N. At 1635 and again just at sundown had good

SPECIES	Abundance				Breeding			Remarks
	1-10	10-100	100-1000	1000 +	Nests	Eggs	Young	
Laysan Albatross								
Black-footed Albatross								
Wedge-tailed Shearwater		20						9 light phase 11 dark phase flock of 10
Christmas I. Shearwater								
Audubon's Shearwater								
Bonin I. Petrel								
Phoenix I. Petrel								
Bulwer's Petrel								
Sooty Petrel ?	1							
Red-tailed Tropicbird								
White-tailed Tropicbird								
Masked Booby	3							all immature
Brown Booby								
Red-footed Booby								
Great Frigatebird								
Golden Plover								
Ruddy Turnstone								
Wandering Tattler								
Sanderling								
Bristle-thighed Curlew								
Sooty Tern			390 ± 70					flocking flock of 250, 30, 75, 35
Gray-backed Tern								
Brown-winged Tern								
Common Noddy								
Hawaiian Noddy								
Blue-gray Noddy								
Fairy Tern								
Harcourt's Storm Petrel		12						
Storm Petrel sp	7							
Shorebird sp	1							Phalarope or Sanderling
Sooty Shearwater	8							+2 probables
White-necked Petrel	3							+2 probables
Dark-rumped Petrel	5							
Newell's Shearwater	2							
Shearwater/Petrel		15						
Petrel sp	6							
Shearwater sp	6							
								# of sightings : 54
								# of flocks : 5
								total birds : 481

Acers: 0800' 250±50 Sooty Tern

feeding 10+ Wedgetail
5 Shearwater/Petrel

1140

30 Sooty Tern

feeding

2 Wedgetail

4 Shearwaters sp.

3 Harcourt's Storm Petrel

1 White-necked Petrel

1212 75±10 Sooty Tern

feeding

1555 3+ Wedgetail

travelling

2+ Dark-rumped P.

1 Petrel sp.

2 Shearwater/Petrel

1736 35±10 Sooty Tern

feeding

King, Warren B.
1964

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looks at Newell's Shearwaters. Underwing has pattern like Bonin Island Petrel with thick black edging. "Scared" flight pattern is usually diagnostic, at least enough to tell one it isn't Wedgetail. Very dark grey on back. Mystery Petrel above had rich dark brown on back.

In all, a fine day with great variation and good numbers. 10°N is at the edge of the equatorial counter current and the nutrients found in the lower part of the euphotic zone around 50°N come to the surface here. More about this later.

March 29--At 0015 on the 29th of March David Au caught a Storm Petrel which had landed on deck during a hydro station, while the ship was motionless, apparently blinded by the spotlight used for taking the hydro stations. After photographing the bird alive at 0900 it was collected.

Field No. 0501. Soft part colors: bill black; legs and feet black; iris dark; gape coral red. It is either Harcourts Storm Petrel *O. castro* or Leaches Storm Petrel *O. leucorhoa*. The latter seems the more probable since the white rump is nearly divided by dark feathers in the middle. It is presumably what we have been calling Harcourts Type B. The wing profile and shade of brown appear to be the same.

Started off morning with Newell's at dawn, perhaps flushed off water by approach of ship. At 0644 an Albatross was seen 500+ yards off bow. Only the silhouette was seen, no colors or patterns. At 0645 a non-molting Dark-rumped Petrel was seen looking quite normal compared with the splotching jobs of the past two days. At 0710 Sundell saw a Bonin Island Petrel in company of two unidentified petrels. Sooty Shearwaters started at 0720 - 5-3 probables throughout the day, heading

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northwest to north, except one whose course was blocked by the ship so that he had to circle around ship. All Wedgetails today (3) were light-phase. Three more small light colored shorebirds were seen today. It seems most probable that most of them are phalaropes. Harcourt's were Type B except one not seen long enough to tell. At 1215 a Bulwer's Petrel came by. The lone Sooty Tern came by at 1515. At 1700 an interesting petrel appeared: upper parts light gray, underparts white, with some black edging on underwings. Medium sized bird, the size of a Newell's Shearwater, larger than a Bonins. Typical petrel flight - high, tight scales on strong wind with reefed wings and hunched shoulders.

Far less activity today than yesterday. Apparently we have left the high productivity area.

March 30--Gale winds all day., with spray breaking over the bow every ten or twenty seconds. Rolls to 40°. Day was dominated by Sooty Shearwaters: 13+ 9 probables, all heading north-northwest to northwest. Three more small light colored shorebirds. It becomes increasingly evident these are phalaropes, since the Sanderling population of the Pacific is not very large. Two Sooty Shears were apparently flying with a White-necked and an unidentified Shearwater/petrel at 0710. They finally turned around and headed northwest. A nice Dark-rumped Petrel at 0711. One Harcourts, a type B and one Wedgetail, light phase rounded out the day.

Location 15th Ave

Observer King, Sundell

Date 30 Mar 64 Time 0610 to 1815

Time 0610 to 1815

Weather very windy - 25-28 knots - high seas - mostly overcast
wind from E.

wind from E

[illegible]

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March 31 A slow day for birds, but lots of wind and high seas. Gale winds continue with little let up in sight.

Sooty Shearwaters again predominated today. Ten and eight probables were recorded, all headed northwest. Harcourt's (one type B, 1 ?) and Storm Petrel (4) sp. were next followed by Shearwater/petrel (1) and a Booby sp. reported by the watch but not observed by Bob or myself. From his description it is plausible. An adult Red-foot or Masked. It would be the first for the cruise since the first day ; if it were a Red-foot. No Black-footed Albatross yet even though we are past 21°N.

The bird recorded as Booby was reidentified as Laysan Albatross after the same watch saw one on 1 April 1964. This seems more likely in view of the scarcity of Boobies out here this month.

April 1--At 0550 the watch saw a Black-footed Albatross behind the ship.

We had expected them one day earlier but the convergence between the north pacific current and the north pacific central waters moves north as we head east so this may be understandable, if the one has any causal relationship upon the other. One Harcourts Storm Petrel today, Type B. Sooty Shearwaters again dominated the day: three and fourteen probables, all heading northwest. At 1104 a Laysan Albatross was seen at very close range by Sundell. At 1227 another Black-foot appeared - six hours after the first so I feel it is safe to assume it is a new bird. At 1630 another one showed up. 1227 bird had an all white rump and 1630 had an all dark rump so these were obviously distinct birds, giving a day's population of three. At 1641 a shorebird appeared, small and light colored, a phalarope or sanderling, identical to those seen previously ^{the} on trip

Weather very windy 22-30 knots, high seas, mostly overcast

[illegible]

Time 0615 to 1815

Weather

[illegible]

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April 2 --An epic day! Hundreds of birds all day. Black-foots started with two birds at 0555 building to seven at 1223. Laysan's seemed peculiarly curious about the ship. One followed for at least 1/2 hour and all three followed for a few minutes.

Of seven Harcourts seen one was ? and others were Type B. Sundell saw a ? Bonin Island Petrel at 0914. Many shorebirds were seen today, eight, all looking the same as previous ones-light and small. They seem to pay no attention to the ship. One Red-tailed Tropicbird, the first in several days was seen at 1225. A Bulwer's Petrel was seen at 1513 and at 1525 two ? Sooty Terns seen by Termite. At 1610 an all back storm petrel, forked tail appeared to be present, was seen by King, called Sooty Storm Petrel?

Sooty Shearwaters started at 0951 and continued all day in a fairly steady stream; sometimes as many as six or so would be visible at one time. They were mostly individuals, some twos and threes and fours but none of the tight packed flocks seen in November. One individual was seen to be lacking the silver underwings, although the flight pattern confirmed the species identification; it was also accompanied by a silver lined bird. 155 and 30 probables filed past the ship in an unending stream. Prospects for more of the same for tomorrow look good.

April 3--Sooty Shearwaters today in masses. 133 of them in twelve hours and fifty minutes, excluding about one hour or so of time when no one was counting. Adding those that weren't seen a total of 2000 for the area we traversed is probably quite conservative. Considering that the 120 miles we covered are equal to 240 square miles of observation

total birds : 222

Weather windy 15-20 knots from E - few clouds

[illegible]

flocks 0730 ~~7 Sooty Shearwaters~~
travelling

~~1032 8 Sooty Shearwaters~~
travelling

~~1036 8 Sooty Shearwaters~~
travelling

1210 25 \pm 2 Sooty Tern
feeding

~~1715 20 Sooty Shearwaters~~
travelling

1745 12 Sooty Tern
feeding

1715 25 \pm 5 Sooty Tern
1 Frigate bird

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and if the total area of the grid is 450,000 square miles then there were 375,000 Sooty Shearwaters in the grid today or 750,000 in a twenty-four hour period, assuming nocturnal activities are roughly similar to their diurnal ones. That's quite a few birds. Just four loosely packed flocks were noted, almost not flocks at all of seven, eight, eight and twenty. Several were seen circling, but not feeding, in a feeding flock of Sooty Terns. All were heading north or northwest depending on how the ship was turned. None came closer than 200 yards. Silver linings were observed on numerous birds all day, when the light was right. Every bird we saw the wing linings of had silver linings. Two Harcourt's SP both type B. Two light phase Wedgetails. Seven shorebirds, similar to those seen previously, small and light colored.

Several Sooty Tern flocks, twenty-five, twenty-five and twelve, one of which had a Frigate over it.

April 4--Fairly good activity today, but none of it due to Sooty Shearwaters. Black-footed Albatross were with us at dawn (4), increased to 40 during a hydro station at 1310, one of which had a silver by land on left leg. It was on the verge of being caught in the net when the ship all day, but never more than three at a time, usually two or one.

Wedgetails present in small numbers, 25 in all, all day. All were light phase. Sooty Terns were the most numerous, totaling 229 with flocks of 115, 60, 15, 6, 6. In addition, they came by in ones and two's all day. Two of the flocks had four and one Fairy Terns respectively connected with them. A Pomarine Jaeger was seen at 0954, pretty far from land. Alone Red-tailed Tropicbird was seen at 1103.

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Some display behavior was noted among the Black-foots. "No saying" and mutual neck preening were seen.

April 12--At 1315 Black-footed Albatrosses started following the ship, just shortly outside of the harbor, building in numbers to nine by late afternoon. During a hydro station two of these were caught in a long handled net and banded: FWS numbers 757-60901, 02, at 1830.

Between 1315 and 1325 a stream of noddy terns, 52 in all, all headed west, crossed the bow, with four more following up to an hour later. Sooty Terns were also numerous, in small groups up to ten, mostly going east.

Only one Jaeger was seen. It followed the ship for a while. It had a dark breast and white abdomen. Three individual Red-footed Boobies were seen, adults, close to Oahu and at 1640 forty more were feeding in a flock of two hundred Sooty Terns. Thereafter sooties continued to be seen in small numbers till dusk. Wedgetails were seen throughout the day, all singles except for a flock of six, all were light phase.

Two Bulwer's Petrels and one ? were seen, flying like small all dark petrels. I hope flight pattern will be sufficient to distinguish between these and Sooty Petrel, since shape of tail is a lousy field mark. At 1629 Dave Bratley saw a large shearwater/petrel with light underparts, gray upperparts and white on either tail rump or lower back.

At 1900 an immature Red-footed Booby perched on the upper wire which connects the two masts. He had departed when I arrived on watch this morning. Dave and I both queasy.

flocks: 0655 6 Sooty Tern

travelling

0953 6 Sooty Tern

travelling

1106 15 \pm 3 Sooty Tern

feeding 4 Fairy Tern

1240 115 \pm 10 Sooty Tern

feeding 1 Fairy Tern

1815 60+ Sooty Tern

feeding

flocks: 1310 10 Sooty Tern

travelling

1315 52 Noddy Tern

travelling

1325 5 Sooty Tern

travelling

1345 6 Sooty Tern

travelling

1640 200 Sooty Tern

feeding 40 Red-footed Booby

1705 6 Wedgetail

travelling

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April 13--Six Bulwer's Petrels today and one ? One was flushed from water and sat again on surface 150 yards from ship. Wedgetail noted in above individual. Numerous Sooty Terns 120+ 15 including four feeding flocks at least one of which was feeding on skipjack. A dark bodied, white headed tern seen. Didn't look like noddy. More like immature Sooty with mature Sooty head.

Flock of twelve Wedgetail Shearwaters in with fifty Sooty Terns feeding on skipjack. Six other individuals; all were light phase.

Sooty Shearwaters seen today, only nine and for a short space of time 0656 to 0717. White rump not observed on any of the three storm petrels seen today, but they were only seen imperfectly. One frigate seen alone, a female adult.

AT 1845 an immature Red-footed Booby circled ship several times as if interested in roosting for night.

One flock contained 30+ 5 Sooty Terns, one plus Wedgetails, two plus shearwater/petrels, one of which was all dark, and a storm petrel.

April 14--Three Bulwer's Petrels today, one in company of Harcourt's Storm Petrel Type B. One feeding flock of Sooty Terns, 40+ 10 seen at a distance.

Two Newell's Shearwaters both clearly seen, unmistakable in black-white contrast and flightpattern. A Masked Booby followed for several hours today, putting on a fancy diving exhibit, going out of sight underwater on one occasion, appearing several seconds later with fish. Bird was brown headed and brown uppernecked with heavy brown splotching on back. Dived both from very oblique angle and straight down from 30+ feet with no attempt to slow down.

flocks: 0645 15 Sooty Tern
feeding

0805 15 Sooty Tern
feeding

1118 50 \pm 10 Sooty Tern
feeding 12 Wedgetail

1355 55 shearwaters
travelling

1811 30 \pm 5 Sooty Tern
1+ Wedgetail
feeding 2+ Shearwater/petrel
1 storm petrel sp.

Rocks: 0644 40±10 Sooty Tern
feeding

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Sooty Shearwaters started to pick up toward evening, six in all seen today.

April 15--First two tropicbirds of cruise shortly after dawn. Two Wedgetails today, both light phase. Ten Harcourts, all Type B. Two Newell's, one seen by Warren King at close range, other by David Bratley, his first. Thirty-six Sooty Shearwaters today, all singles headed north to west. Bulwer's Petrels plentiful, nine plus 2(?). They came pretty close to ship; hopefully we can collect some when weather gets better. At 0605 a large bird, size of a booby, large and robust with gull like wing beats interspersed with glide, white underparts and dark brown upper parts, flying in short arcs, cutting above horizon. At 0718 another large bird, all dark, flying at 50 feet with constant wing beats, gull or falcon like. Two White-necked Petrels and three dark rumped petrels today, all clearly observed. Feathers looked normal. No mottling. Only four Sooty Terns. A lone Bonin Island Petrel seen, the first of the trip.

Area was rich in bird life but no birds seen feeding. It seemed more like they were coming and going to some area near us, probably to south where better food supply is. Dave still a bit queasy.

April 16-- Slow day today. Very little bird activity. Only five Sooty Shearwaters, going north to west. Most birds were flying fast in strong wind and few came near ship.

Bulwer's Petrel continues in small but consistent numbers two and one (?).

Weather overcast, wind from E 20-28 knots - rough

[illegible]

flocks: 0955 50±10 Sooty Tern

feeding

6 Wedgetail

3 Shearwater/petrel x

3 Shearwater/petrel

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At 0955 a flock, no feeding just moving of 50+ 10 Sooty Terns, at least six light phase Wedgetails, three unidentified Shearwater/petrels and three ~~three~~ shearwater/petrel X were seen headed north, moving same direction as ship but faster. The birds X were same as 0705 15 April in all likelihood. They were bigger than Wedgetails, compact, brown on upperparts, underwing surface dark, breast white, flew in unhurried manner, several slow flaps then high but short arcing glide. Bird seems to fit description of Pink-footed Shearwater Puffinus creatopus. We'll be on the lookout for further examples.

Two good Dark-rumped Petrels in the afternoon, 1520 and 1738.

Things may pick up tomorrow.

April 17--Two Wedgetails, together, both light phase.

Eight Sooty Shearwaters, individuals, all headed north to west.

At 1040 a bird flew 350 off port bow. Larger than Sooty Shearwater, flying with constant wingbeats dark upperparts, dark underparts, lighter about face and lower abdomen. Flew at 25 feet for several hundred yards, arced twice and flew close to water thereafter: tail looked rather long.

Perhaps a flacon (?). At 1559 a Pink-footed Shearwater (?), or at least same as 0955 16 April 1964, flew 300 off port bow to northwest. Had dark upper parts, white underparts with dark underwings, larger and bulkier than Wedgetail. Flapped slowly and loosely, interspersed with short glides. At 1653 a Dark-rumped Petrel was seen.

The day was very slow in general, I dropped ink bottle in head, leaving large black spot on floor shaped like Rohrschark Test blot, only 2 feet across. Rapidograph No. 1 broke. Notebook paper held in reserve has proved too large. I'll have to start using blood on toilet paper.

SPECIES	Abundance				Breeding			Remarks
	1-10	10-100	100-1000	1000 +	Nests	Eggs	Young	
Laysan Albatross								
Black-footed Albatross								
Wedge-tailed Shearwater	2							light phase
Christmas I. Shearwater								
Audubon's Shearwater								
Bonin I. Petrel								
Phoenix I. Petrel								
Bulwer's Petrel								
Sooty Petrel								
Red-tailed Tropicbird								
White-tailed Tropicbird								
Masked Booby								
Brown Booby								
Red-footed Booby								
Great Frigatebird								
Golden Plover								
Ruddy Turnstone								
Wandering Tattler								
Sanderling								
Bristle-thighed Curlew								
Sooty Tern								
Gray-backed Tern								
Brown-winged Tern								
Common Noddy								
Hawaiian Noddy								
Blue-gray Noddy								
Fairy Tern								
Sooty Shearwaters	8							
Shearwater/petrel	5							
bird sp	2							
Petrel sp	1							
Line-footed Shear?	1							
Dark-rumped Petrel	1							
								# of sightings : 18 # of flocks : 0 total birds : 20

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Began observation 0605 in sight of land. Five Sooty Terns seen.
Nine Sooty Shearwaters, individuals, all flying northwest. Seen within
7.6 miles of land.

Two large flocks of Hawaiian Noddies seen feeding within 5 miles of
shore, one following behind a fishing sampan. Looked like storm petrels
from a distance. 0800 arrived inside breakwater.

April 18

Began observation 0605 in sight of land five Sooty Terns seen.

Nine Sooty Shearwaters, individuals, all flying northwest.

Seen within 7.6 miles of land.

Two large flocks of Hawaiian Noddies seen feeding within 5 miles
of shore, one following behind a fishing sampan. Looked like storm
petrels from a distance. 0800 arrived inside breakwater.

flocks 0730 220±25 Hawaiian Noddy

feeding

0736

200±50

Hawaiian Noddy

feeding

Time 0600 to 1900

Weather 15-25 knots from E partly overcast

[illegible]

Two Lark rumped Petrels headed W at 0626+0708
Only Sooty Shearwaters, headed NW at 0640
7 Harcourt's S.P. all Type B, one seen in midst
of rain squall, all heading NW
one light phase wedgetail 0820 heading W
1 adult Redtailed Tropicbird seen sitting on water
at 1532 first Black-footed Albatross of leg
appeared, staying until dark.

Flocks: 0729 6 Sooty Tern
travelling.

Five Type B Harcourts today, also one
? Sooty Storm Petrel (0715) and one storm petrel sp.

One Black-footed Albatross followed all day.

Two sooty Tern sightings, 6 + 1 heading NW + NE.

Three more Pink-footed Shearwaters? same
as previous ones, 1 at 1129 heading SE + 2 at 1715
heading N.

Only 2 Sooty Shearwaters, individuals at 1801
+ 1826, latter heading N, former zigzagging back
and forth in front of ship.

at 1802 small white underneath Shearwater/
petrel was presumed to be Bonin Is Petrel? Not
well seen.

A slow day, more active morning + evening.
One more Red-tailed Tropicbird.

With wind behind our beam ride is smoother
so we will try to collect tomorrow.

Spralls

total birds: 25

One Black footed Albatross followed us all day
At 0703 another Bird-footed Shearwater passed, this
time rather close, 150 yds or so. Previous descriptions
same, except for dark band, perhaps only partial,
around ~~under~~ upper breast, lower neck area.

4 Harcourt's and 2 storm petrel sp. seen, all of former Type B.

2 Red-tailed Tropicbirds today. A large number for this area.

Dave saw a dark phased Wedgetail - very dark he said.

5 Pomarine Jaegers today, even though we are over
300 miles from land. 2 dark, 2 light, 1 dark breast &
light abdomen.

At 1230 Dave saw a ~~Black~~ed, grey backed, deeply
banded White-tailed Tern with white underparts,
verdict was Arctic Tern? flying N. Not seen as
well as could have been.

6 Sooty Shearwaters, all in the afternoon all
heading NW to W.

During morning passed close by Scripps Research ship
Argo - 210 ft - Capt. Collinson friend of Bobby Lee's, the
capt of I. Caswell. They are bound for Honolulu and
Indian Ocean for 6 months.

In afternoon scrambled out boon over water to
replace block on port BT which had slipped its pulley. Fix.

Location	11th Deny		
Observer	King, Brattle	Date	24 Apr 64
		Time	0540 to 1830
Weather	20-25 knots from E - heavy overcast & rain most of afternoon		

[illegible]

13 Harcourt's Storm Petrels, Type B and 1 storm petrel sp seen today, all travelling N to W. as were almost all of the birds seen today.

8 wedgetails all light phase all heading N or W

9 Sooty Shearwaters travelling N or W. except one rufous-sided one who was headed E, undoubtedly a black rookery

3 Pomarine Jaegers, 1 light phase, then 1 light & 1 dark, heading NW.

At 1022 a small grey bird was seen, ternlike but much larger than Sooty Tern, long grey tail feathers, flew like large tern or Jaeger. Decided it was one of the smaller Jaegers, probably parasitic.

2 Bulwer's & 1? heading W or NW

At 1206 a Tern of some sort was seen very high - at least 200 ft high.

At 1250 Dave saw another Arctic Tern - white longtail, grey back & black cap.

At 1752 saw an adult White-tailed Tropicbird at 100 ft headed N. first one of cruise.

More activity today than last couple of days. Should be very good tomorrow.

Location	12th Day		
Observer	King Beatty	Date	25 Apr 64
Weather	18-22 knots from E - partly cloudy		
Time	0610 to 1845		

[illegible]

flocks: 1650. 12 Sooty Tern
travelling 2 Wedgetail

Before observations began, watch saw a Sooty Tern, a Fairy Tern, and a Pomarine Jaeger.

A Redtailed Tropicbird was just above the mast as I came on deck at 0610.

12 Wedgetails today, 4 dark + 8 light, 2 appeared to be discreetly following ship at dist.

In addition, at 1102 an all dark shearwater slightly smaller than Wedgetail, flying with somewhat stiffer wingbeats flew close by ship. I called it Christmas Island Shearwater, the first I've seen which has really satisfied me.

Many Harcourts today, 15 + 3 storm petrel species. While stopped for Drogue station I spread 1 1/2 gallon of wesson oil mixed with 1/4 pint cod liver oil behind ship forming oil slick initially 50 ft x 75 ft, expanding to 50 yds x 200 yds in an hour. Slick seemed to attract Storm Petrels, 1 and then 2 were seen passing back & forth over it. One was seen to pass ship, turn, follow trail of oil to slick area.

Slick area visible from long way off. Promises to be easy way to catch Harcourts, especially with fish oil. It seemed that birds flying like Type B down or cross wind, flew like Type A into wind. This may be origin of 2 blight types.

15 Sooty Terns, 12 in a high, dispersed flock.

At 1205 a medium-large all grey petrel came within 75 ft of ship, permitting excellent views. It had light triangular spots toward ends of underwing, rest of which was smoky grey. Breast + belly smoky grey, upperparts darker smoky grey. Not brown nor with round spots like Kermadec! Most likely was Sooty Tern's Petrel. A better look could not be wished.

9 Sooty Shearwaters, individuals all heading N or NW or W

at 1604 a Bonin Is Petrel was seen, heading S.

At 1615 a White tailed Tropicbird was flushed from the water very close to ship.

At 1620 an immature Masked Booby passed by ship.

Ship stationary from dawn to noon for drogue exercises.

SPECIES	Abundance				Breeding			Remarks
	1-10	10-100	100-1000	1000 +	Nests	Eggs	Young	
Laysan Albatross								
Black-footed Albatross								
Wedge-tailed Shearwater			132					118 dark 6 light 8 undetermined phase flocks of 50 ± 10 + 50
Christmas I. Shearwater								
Audubon's Shearwater								
Bonin I. Petrel								
Phoenix I. Petrel								
Bulwer's Petrel	2							+1?
Sooty Petrel								
Red-tailed Tropicbird								
White-tailed Tropicbird								
Masked Booby	2							
Brown Booby								
Red-footed Booby								
Great Frigatebird								
Golden Plover								
Ruddy Turnstone								
Wandering Tattler								
Sanderling								
Bristle-thighed Curlew								
Sooty Tern			132					flocks of 7, 125
Gray-backed Tern								
Brown-winged Tern								
Common Noddy								
Hawaiian Noddy								
Blue-gray Noddy								
Fairy Tern								
Dark-rumped Petrel	7							+1?
Newell's Shearwater	3							
shearwater/petrel		15						
Sooty Shearwater		25						
Harcourt's Storm Petrel		11						
storm petrel sp.	1							
Pink-footed Shear?	2							
petrel sp	2							
Pomarine Jaeger	1							
White-necked Petrel	1							
bird	1							# of sightings: 67 # of flocks: 3 total birds: 339

At 0610 appeared the first of 8 Dark-rumped Petrels. This one was obviously undergoing molt. It was missing secondaries and was mottled brown gray on the back like numerous birds of last cruise. The other 7, 3 in a flock, 2 together & 2 singles were all with fresh plumage. At 0920 one white-necked Petrel was observed.

3 Newell's Shearwaters today, all well seen. The first, at 0611, flew alongside ship less than 100 yds out for a while then, turning astern of ship, almost fell into water hitting the lee of the wind.

25 Sooty Shearwaters, all 1, 2, or 3 to a bunch, all headed N to W.

11 Harcourts and 1 storm petrel sp, several of which were in pairs. The Harcourts were more numerous where the other species were less numerous.

At 0705 another Pink-footed Shearwater? was seen in the company of a dark phase Wedgetail, and again at 0822 Dave Bratley saw one of same description.

Wedgetails very numerous today. Probably most of early morning shearwater/petrels were Wedgetails. 132 seen in all, ~~118~~ 118 dark phase, 6 light & 8 not determined. Far higher percentage of dark to light than last cruise.

At 0714 2 immature masked Boobies followed ship for minute or two.

132 Sooty Terns, all in 2 flocks, 7 & 125 both feeding with 50 or so Wedgetails.

At 0905 a Pomarine Jaeger was seen by both Bratley & King at fairly close range. It had dark breast & light abdomen.

2 Bulwers + 1? were seen.

Starting just after dawn and ending before noon a very rich area must have been passed. The water looked greener & flying fish were abundant. 2 feeding flocks were seen, feeding on Slipjack, and birds were very numerous throughout the area. Thereafter things slowed down, the main traffic being Harcourts & Sooty Terns which don't feed anyway.

flocks: 0801	1 Newell's Shear.	0900	50±10 Wedgetail
		feeding	3 Dark-rumped P.
travelling	3 Wedgetail		7 Sooty Terns
	1 Sooty Shear	0937	50-60 Wedgetail
		feeding	1 petrel
			1 Harcourts S.P.
			125-150 Sooty Terns

total birds: 295

A peculiar day, 17 sightings but 295 birds, 4 flocks.
a remnant of a flock, 4 sooty Terns + a Wedgetail, dark phase
appeared at 0604, at 0610 followed by a larger feeding
flock of 125 ± 5 Sooty Tern + 5 shearwater/petrel followed
at 0618 by a very large flock: 175 ± 50 Sooty Tern + at
least 2 and probably many more Shearwater/petrels. Finally
at 1555 a flock of 75 ± 25 Sooty Terns was spotted. The
flocks, except the first, were all feeding.

Only 2 Harcourt's Storm Petrels, NW + W headed, both
type B.

3 Wedgetails, one adult phase with the 4 Sooty Terns, the other
2 individuals light phase.

At 1140 King saw 2 light grey backed, white tailed, black
capped Terns heading North, presumably Arctic Terns. At
first glance they looked like Tropicbirds taking off from the
water. I am not certain they were actually on the water,
but it appeared so.

at 1456 a Dark-rumped Petrel was seen by Bratley, headed N

at 1609 a Red tailed Tropicbird was seen taking off from the water.

Only 3 Sooty Shearwaters - 2 + 1, both parties headed N.

flocks: 0604 4 Sooty Tern 0610 1515 Sooty Tern
travelling 1 Wedgetail feeding 5 shearwaters/petrel

0618 175150 Sooty Tern
feeding 21 shearwater/petrel

1555 75125 Sooty Tern
feeding

Time 0540 to 1815

[illegible]

Flocks: 1621 6 Sooty Tern

travelling

2-5 Sooty Shearwaters today, in 10, 20 & 30, all heading NW.

4 were seen in a group sitting on the water by Bratley before they flew.

12 Harcourt's Storm Petrels and 1 storm petrel sp., all of former being Type B; 2 pairs were seen.

A pomarine Jaeger was headed NW at 0807.

Two sightings of Arctic Terns, 1 at 0808 and 2 at 1240 headed N+W respectively. The latter two were evidently sitting on the water ahead of the ship. The previous sighting of 2 several days ago prompted me to think they too were getting up off the water.

Two wedgetails - both light phase

At 1110 a nice Newell's Shearwater was seen heading N.

6 Harcourt's Storm Petrels today and 4 storm petrel / Bulwer's Petrels,
mostly heading west.

At 0702 watch saw a small light colored shorebird, and
at 1007 2 more were seen by King + Bratley. These are the
first shorebirds seen since the first day of the cruise.

At 0840 Bratley saw an Arctic Tern "diving into water - on last
dive did not reappear above waves." Later, at 1717 King +
Bratley saw 2 more, all 3 heading N.

5 Wedgetails, all light phase. On several occasions it was
evident that the wedgetail was following the ship like an Albatross.
It is impossible to tell if the same bird followed most of
the day.

10 Sooty Shearwaters today, in 1s + 2s, all heading NW.

Weather partly cloudy, wind NE 25 knots morning, 18 knots afternoon

[illegible]

11 Hutton's Storm Petrels and 5 Storm Petrel sp, today, the most common bird. almost all were headed NW.
5 Sooty Shearwaters, individuals, headed NW.

At 1242 a Pomarine Jaeger was seen by Bratley sitting on the water, only moving Sft or so as ship went by.

At 1342 a Laysan Albatross appeared, followed ship for 15 minutes.

At 1432 a Black footed Albatross appeared, followed ship until dark.

Very slow today. Little variety or activity.

Tonight Dave & I participate in Variability Study for BTs.

Tomorrow we should have turned corner & headed for home.